Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWAR S. SHAMSHOUM, DAVID J. RAUSCHER and DOUGLAS A. BURMASTER

Appeal No. 1997-1684
Application No. 08/223,916[1]

ON BRIEF

Before CAROFF, KIMLIN, and JOHN D. SMITH, Administrative Patent Judges.

CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This decision on appeal relates to the final rejection of claims 13-14 and 29-70. Claims 1-12, all the other claims remaining in the application, stand withdrawn from consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention and, thus, are not before us on appeal.

[1] Application for patent filed April 6, 1994.

The claims on appeal are directed to a process for the polymerization of propylene involving a conventional Ziegler-Natta catalyst which is contacted with an organoaluminum compound and at least two electron donors.

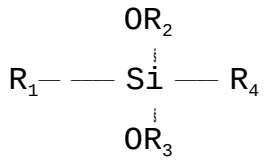
Claim 13, the sole independent claim, is illustrative of the claimed process:[2]

13. A process for the polymerization of propylene, comprising:

(a) selecting a conventional Ziegler-Natta catalyst and

(b) contacting the catalyst with an organoaluminum compound;

(c) contacting the catalyst with a mixture of at least two electron donors, simultaneously with or after step (b), one described by the formula:



wherein R_1 and R_4 are both an alkyl or cycloalkyl group containing a secondary or tertiary carbon atom attached to the silicon atom, R_1 and R_4 being the same; R_2 and R_3 are alkyl or aryl groups, R_2 and R_3 being the same or different;

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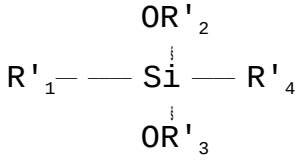
[2] Claim 13 defines two distinct electron donor categories, each by a different chemical formula. We shall refer to the first category as "ED1" and the second category as "ED2".

and the other described by the formula:



wherein R'_1 is an alkyl or cycloalkyl group containing at least one primary, secondary or tertiary carbon atom attached to the silicon atom, R'_2 and R'_3 are an alkyl or aryl group, R'_2 and R'_3 being the same or different; and R'_4 is an alkyl group with a primary carbon attached to the silicon atom, R'_1 and R'_4 being the same or different;

(d) introducing the catalyst into a polymerization reaction zone containing said organoaluminum compound, said electron donors and monomer; and

(e) extracting polypropylene from the polymerization reaction zone.

The references of record relied upon by the examiner as evidence of obviousness are:

Shamshowm et al. (Shamshoum)	5,308,818	May 3, 1994 (filing date: June 8, 1992)
Hoppin et al. (Hoppin)	4,829,038	May 9, 1989
Ewen	4,927,797	May 22, 1990

The following rejections are before us for consideration:[3]

[3]By Advisory Action (Paper No. 8), the examiner has indicated that a previously applied rejection under the second

1. Claims 13-14 and 29-70, all of the claims on appeal, stand rejected for obviousness under 35 U.S.C. § 103 over either Shamshoum or Hoppin.

2. Claims 29 and 53-70 additionally stand rejected for obviousness under 35 U.S.C. § 103 over Hoppin in view of either Shamshoum or Ewen.

We have carefully considered the entire record in light of the opposing positions advanced on appeal. In so doing, we conclude that the examiner has established a prima facie case of obviousness. However, we are persuaded that the data reported on pages 21-22 and 24 (Tables 1-6) of appellants' specification are indicative of unexpected results as to the subject matter encompassed by claims 43-44, 51-52, 61-62 and 69-70. Accordingly, we shall affirm the rejections at issue as to claims 13-14, 29-42, 45-50, 53-60 and 63-68, but reverse as to claims 43-44, 51-52, 61-62 and 69-70.

There is little question that Shamshoum and Hoppin each disclose a propylene polymerization process involving a

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paragraph of 35 U.S.C. § 112 has been withdrawn and, thus, is not before us.

catalyst system which includes a conventional Ziegler-Natta catalyst, an organoaluminum co-catalyst and an organosilane electron donor, much like the process claimed by appellants.

Additionally, each of the primary references disclose specific organosilane electron donors in both of the categories (ED1 and ED2) defined by appellants' claims. For example, diisopropyl dimethoxysilane (DIDS), an ED1 compound, is disclosed in Shamshoum (column 6, lines 20-22) and Hoppin (column 1, lines 59-60). Likewise, cyclohexylmethyl dimethoxysilane (CMDS), an ED 2 compound, is disclosed in Shamshoum (column 4, line 14) and Hoppin (column 9, Table I, example J).

The primary issue in contention is the obviousness of using a mixture of an ED 1 compound and an ED 2 compound in a propylene polymerization process. We agree with the examiner that it would have been prima facie obvious, within the context of 35 U.S.C.
§ 103, to combine two compounds, each of which having been individually disclosed by the prior art as useful for the same purpose, to form a composition to be used for the very same

purpose. See In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

In this regard, we note that Hoppin (column 1, lines 54-61) explicitly suggests that a mixture of organosilane electron donors can be used. While we would agree with appellants that Shamshoum cannot be similarly interpreted as explicitly suggesting such a combination, we are nevertheless of the view that the disclosure of individual organosilane electron donors in Shamshoum, as in Hoppin, establishes a prima facie case of obviousness for the claimed combination under the Kerkhoven rationale.

We agree with appellants that the comparative data presented in their specification (Tables 1-6) provide evidence of unexpected results when particular combinations of electron donors at specific molar ratios are used in a propylene polymerization process under specified conditions. As noted in appellants' Brief, these results include:

(1) a decrease of xylene solubles at specified electron donor molar ratios as the amount of electron donor which resulted in a higher amount of xylene solubles, i.e. CMDS, was increased (Tables 1-4);

(2) in some cases, the xylene solubles for particular combinations of electron donors was less than when either of the electron donors was used alone (Tables 1-2 as compared to Table 4); and

(3) the polydispersity ("D" values) of the polymer product for one particular combination of electron donors (the DIDS/CMDS system) at specified molar ratios was greater than when either of the electron donors was used alone (Tables 5-6).

The examiner does not directly refute appellants' showing of unexpected results.

The examiner focuses on claimed ranges of polydispersity and xylene solubles rather than analyzing the particular effects on these parameters when using a combination of electron donors as demonstrated by appellants. Demonstrated results need not be specifically claimed in order to serve as evidence of nonobviousness. See Ex parte Strobel, 160 USPQ 352, 353,
(Bd. of App. 1968); In re Zenitz, 333 F.2d 924, 927, 142 USPQ 158, 161 (CCPA 1964).

While we find that appellants have provided some evidence of unexpected results, those results are based on comparison testing limited to specific electron donor molar ratios and to the use of CMDS as the only exemplary electron donor of the ED 2 type. Appellants have not offered any cogent reasoning or additional evidence to support a conclusion that the demonstrated results can reasonably be extrapolated to claimed subject matter of considerably greater scope. Accordingly, we conclude that the evidence is not commensurate in scope with those claims not limited to specific electron donor molar ratios and to the use of CMDS, in particular, as the ED 2 component of the electron donor mixture. At best, we find that the evidence of unexpected results is reasonably commensurate in scope with those claims which are so limited, i.e. claims 43-44, 51-52,
61-62 and 69-70.

For the foregoing reasons, the decision of the examiner is affirmed as to claims 13-14, 29-42, 45-50, 53-60 and 63-68, and reversed as to claims 43-44, 51-52, 61-62 and 69-70.

No period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

MARC L. CAROFF Administrative Patent Judge	)	
EDWARD C. KIMLIN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN D. SMITH Administrative Patent Judge	)	

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Appeal No. 1997-1684
Application No. 08/223,916

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Appeal No. 97-1684
Application No. 08/223,916

APJ CAROFF

APJ JOHN D. SMITH

APJ KIMLIN

DECISION: AFFIRMED-IN-PART
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):

Prepared: December 5, 2000

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT